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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,626

03/31/2004

Robert Socha

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MCDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

LIU, MICHAEL

ART UNIT

PAPER NUMBER

2851

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/813,626	Applicant(s) SOCHA, ROBERT	
	Examiner Michael Liu	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-17 and 19-42 is/are pending in the application.
- 4a) Of the above claim(s) 6-15 and 21-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,16,17,19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/28/08, 3/14/08</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Receipt is acknowledged of the Amendment filed 1/28/08. Claims 1 and 16 have been amended, claims 3 and 18 have been canceled, and claims 6-15 and 21-42 have been withdrawn by this amendment. Additionally, in the "Amendments to the Claims," Applicant has stated claims 2-3 are original without reciting the claims. The examiner assumes that this was a typo. Claim 2 will be examined as originally presented in the Claims filed 3/31/04, and claim 3 will be treated as canceled, in accordance with the first paragraph of the Remarks on page 19.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 1/28/08 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner. This IDS was filed in response to the foreign references not being present in the application, not because the copies were illegible. Now that the references have been provided, this IDS has now been considered.

3. The information disclosure statement filed 3/14/08 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. The list of US patent documents that do comply with all the requirements of 37 CFR 1.97 and 37 CFR 1.98 have been considered, but the other items (the foreign document and the reference in Other Art)

have not been considered. A line has been drawn through the citations to show that the reference has not been considered.

Drawings

4. The drawings are objected to because Figs 2 and 4 contain a typographical error. The word "fragmenation" needs to be corrected. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The corrections to the title have been considered, and the specification objection is now withdrawn.

6. The disclosure is objected to because of the following informalities: In par 0011, the phrase "image log slop" is a typo and should be corrected.

Appropriate correction is required.

Claim Objections

7. Claim 2 is objected to because of the following informalities: Although the claim has the correct claim identifier, which is "(Original)", the claim limitation is not recited in the amendment. Appropriate correction is required.

8. Claim 3 is objected to because of the following informalities: The claim identifier should be "(Canceled)" within the claim amendments. Appropriate correction is required.

9. The corrections to claims 3 and 18 have been considered, and the previous claim objections are now withdrawn.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 4, 5, 16, 17, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosenbluth et al (2002/0140920).

Re claims 1 and 16: Rosenbluth et al discloses a method for optimizing an illumination source for a mask illumination comprising the steps of:

providing illumination from an illumination source 110 to a plurality of source points [see Fig 3] and a predetermined mask pattern 120;

selecting fragmentation points 604- 612 in an image plane of an image formed by the illumination provided to the mask pattern [see Fig 6];

determining an intensity and image log slope of illumination at each fragmentation point [par 0099];

determining an optimal illumination source [par 0099: "optimization problem for the jth source direction"] as an illumination source which maximizes the image log slope [par 0099: "the log-slope will be maximized"] at the selected fragmentation points and has an intensity within a predetermined range [par 0099: "intensity...constrained to be greater than or equal to 1"], wherein the optimal illumination source forces the illumination intensity at the image plane to a predetermined value. [Par 0026: "Image constraints may include, for example, a predefined intensity at desired image feature edge points." A predefined intensity is equivalent to the forcing the illumination intensity at the image plane to a predetermined value.]

Re claims 2 and 17: further providing the step of providing optimization constraints on the optimal illumination source [see par 0099-0101].

Re claims 4 and 19: wherein the step of determining an optimal illumination source determines an optimal shape of the illumination source [par 0071].

Re claims 5 and 20: wherein the step of determining an optimal illumination source determines an optimal intensity of the illumination source [step 553 of Fig 5A; par 0085].

Response to Arguments

12. Applicant's arguments with respect to the Rosenbluth reference have been fully considered but they are not persuasive. Applicant states in the second paragraph of page 20 of the Remarks, "Applicant has diligently reviewed and considered Rosenbluth and is unable to find any disclosure, or suggestion for that matter, of the optimal illumination source forcing the illumination intensity at the image plane to a predetermined value, as claims 1 and 16 recite." The examiner respectfully disagrees. First, par 0099 of Rosenbluth contains, "The intensity at edge points such as 640, 606, 608, 610, and 612 is constrained to be greater than or equal to 1." Therefore, the intensity at the image plane can be constrained to be equal to one. Second, Rosenbluth additionally recites in par 0026, "Image constraints may include, for example, a predefined intensity at desired image feature edge points." This confirms that the intensity can be forced to a certain predetermined value at the image plane. Therefore, the Rosenbluth reference meets the additional limitations of claims 1 and 16.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Liu whose telephone number is 571-272-9019. The examiner can normally be reached on Monday through Friday 9 am - 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Michael Liu
Examiner
Art Unit 2851

ML 4/9/08

/Diane I Lee/
Supervisory Patent Examiner, Art Unit 2851